

NEW OR LITTLE KNOWN FISHES IN THE QUEENSLAND MUSEUM.

By J. Douglas Ogilby.



IN the following paper will be found descriptions of four genera and sixteen species of fishes, all of which—with the exception of *Ostichthys australis* (Castelnau)—are considered to be new to science. Excluding *Anyperistius*, which is founded on a New Guinea plotosid, *Sphyræna waitii*, hitherto only recorded from the New South Wales Coast, *Ostichthys spiniceps* from the South Seas, and *Holocentrus angustifrons* from New Britain, all these genera and species belong to the Queensland fauna.

The proposed new genera are as follows—

- i. NEMAPTERYX; fam. *Siluridæ*; type *Arius stirlingi* Ogilby, Proc. Linn. Soc. N. S. Wales, xxiii, 9. xii. 1898, p. 281.*
- ii. ANYPERISTIUS; † fam. *Plotosidæ*; type *A. perugiæ* Ogilby, nom. nov. for *Eumeda elongata* Perugia, Ann. Mus. Genov., (2) xiv, 1894, p. 552, not of Castelnau, Proc. Linn. Soc. N. S. Wales, iii, 1878, p. 144, which is *Neosilurus hyrtlii* juv.
- iii. JENYNSELLA; fam. *Aplochitonidæ*; type *J. weatherilli*; v. infra.
- iv. SQUALOMUGIL; fam. *Mugilidæ*; type *Mugil nasutus* de Vis, Proc. Linn. Soc. N. S. Wales, vii, 1882, p. 621 (iv. 1883).

The species described below are as follows—

1. TACHYSURUS BROADBENTI; fam. *Siluridæ*; Cape York, N.Q.
2. NEOSILURUS MEDIOBARBIS; fam. *Plotosidæ*; loc. ign.
3. NEOSILURUS ROBUSTUS; fam. ead.; Keppel Bay, S.Q. ? *Neosilurus hyrtlii* x *Tandanus tandanus*.
4. JENYNSELLA WEATHERILLI; fam. *Aplochitonidæ*; Enoggera Creek, Brisbane, S.Q.

* The type specimen is from the Adelaide River, Northern Territory, but there is a small example from North-Eastern Queensland in the State Museum.

† Boulenger (B. M. Catal. Fish., ed. 2, i, p. 269) has altered the orthography of Günther's name *Anyperodon* to *Anhyperodon*; this is unnecessary, if not absolutely incorrect, as the word is formed like similar Greek compound words, such for instance as *ἀννέριβας*.

5. CORYTHOICHTHYS SPINICAUDATUS; fam. *Syngnathidæ*; Cape York, N.Q.
6. HIPPOCAMPUS DAHLI; fam. *Hippocampidæ*; Moreton Bay, S.Q.
7. MUGIL STEVENSI; fam. *Mugilidæ*; Rockingham Bay, N.Q.
8. MUGIL NORTONI; fam. ead.; Eastern Australia.
9. MUGIL TADOPSIS; fam. ead.; Moreton Bay, S.Q.
10. SPHYRÆNA WAITII; fam. *Sphyrænidæ*; Port Jackson, N.S.W.
11. OSTICHTHYS AUSTRALIS = *Myripristes australis* Castelnau; fam. *Holocentridæ*; Cape York, N.Q.
12. OSTICHTHYS SPINICEPS; fam. ead.; South Sea Islands.
13. HOLOCENTRUS ANGUSTIFRONS; fam. ead.; New Britain.
14. PSEUDOCCHROMIS WILDII; fam. *Pseudochromididæ*; Moreton Bay, S.Q.
15. DAMPIERIA LONGIPINNIS; fam. ead.; Coast of Queensland.
16. CALLIONYMUS LIMICEPS; fam. *Callionymidæ*; Moreton Bay, S.Q.

The following fifteen species are, it is believed, here recorded for the first time from Queensland waters—

1. STEGOSTOMA TIGRINUM (Gmelin), Syst. Nat., p. 1493, 1788; fam. *Orectolobidæ*. Specimens are in the Museum from Cape York and Normanton. This shark occurs as a straggler as far south as Port Jackson.
2. ORECTOLOBUS DASYPOGON (Bleeker), Arch. Néerl., 1867, p. 400; fam. *Orectolobidæ*. Occurs at Dunk Island.
3. SPHYRNA TUDES (Cuvier MS.—Valenciennes), Mém. Mus., ix, 1822, p. 225; fam. *Sphyrnidæ*. This is the common "hammerhead" of Moreton Bay, from whence I have seen several specimens. I have also handled one from the Tweed Heads, which entitles the species to inclusion in the fauna of New South Wales. Not hitherto recorded from Australia.
4. SPHYRNA BLOCHII (Cuvier MS.—Valenciennes), Mém. Mus. ix, 1822, p. 227; fam. ead. The Museum possesses a couple of fetal examples of this unmistakeable shark taken from a female killed in Rockingham Bay. A new record for Australia.
5. PRISTIS ZEPHYREUS Jordan & Starks, Fishes of Sinaloa, p. 383, 1895; fam. *Pristidæ*. A pair of rostra from the Queensland Coast in the State Museum appear to agree more nearly with this species than with the typical *P. perrotteti*, the only other form with which it could be confounded. A new Australian record.

6. RHINA ANCYLOSTOMA Schneider, Syst. Ichth., p. 352, 1801; fam. *Rhinobatidæ*. A specimen of this fine guitar-fish was captured some years ago in Moreton Bay, and forms now a part of the mounted collection in the State Museum. This is also an Australian record.
7. RHYNCHOBATUS DJIDDENSIS (Forskål), Descr. Anim., p. 18, 1775; fam. ead. Not uncommon on our coast.
8. PTEROPLATEA AUSTRALIS Ramsay & Ogilby, Proc. Linn. Soc. N. S. Wales, x, 1885, p. 575 (3. iv. 1886); fam. *Dasyatidæ*. Not uncommon in Moreton Bay.
9. STOLEPHORUS ROBUSTUS (Ogilby), Proc. Linn. Soc. N. S. Wales, xxii, 17. ix. 1897, p. 64; fam. *Clupeidæ*. Visits Southport in large shoals during the colder months.
10. HYPERLOPHUS COPII Ogilby, *ibid.*, p. 72; fam. ead. Same as preceding.
11. EXONAUTES OXYCEPHALUS (Bleeker), Nat. Tijds. Ned. Ind., iii, 1852, p. 771; fam. *Exocætidæ*. There is a fine example of this species in the State Museum from Torres' Straits, thus entitling it to a place in our fauna and that of the Commonwealth.
12. CYSILURUS MELANOCERCUS (Ogilby), Proc. Linn. Soc. N. S. Wales, x, 4. vi. 1885, p. 123; fam. ead. Occurs in Moreton Bay.
13. ICHTHYOCAMPUS CINCTUS (Ramsay), Proc. Linn. Soc. N. S. Wales, vii, 23. v. 1882, p. 111; fam. *Syngnathidæ*. There is a single specimen from Moreton Bay in the State Museum.
14. LUTIANUS GIBBUS (Forskål), Descr. Anim., p. 46, 1775; fam. *Lutianidæ*. There is a fine specimen in the State Museum from the "Torres Group," thus constituting an addition to the fauna of Queensland and Australia.
15. DACTYLOPUS* DACTYLOPUS (Cuvier & Valenciennes), Hist. Nat. Poiss., xii, p. 310, 1837; fam. *Callionymidæ*. Not uncommon in Moreton Bay. Also an addition to the Australian fauna.

The following new names are proposed as substitutes for others held to be wrongly employed—

1. ANYPERISTIUS PERUGLE for *Eumeda elongata* Perugia; not of Castelnau (v. supra).
2. MUGIL ALCOCKI for *M. subviridis* Günther; not of Cuvier & Valenciennes.

* Günther (B.M. Catal. Fish., iii, p. 151) states in a footnote that this name is "preoccupied." On consulting Scudder's "Nomenclator Zoologicus" I find that Gill's *Dactylopus* (1859) has the precedence by three years over Claus in *Crustacea*. *Dactylopius* Costa (about 1841), proposed for a genus of *Hemiptera*, does not interfere with *Dactylopus*, and probably is not even from the same root. *Vulsus* Günther, is therefore unnecessary.

Finally a key is given to the species of *Neosilurus* Steindachner, and the full synonymy of the East Australian fresh-water mullet, *Trachystoma petardi* (Castelnau).

Of the fifteen species described below as new the most interesting is undoubtedly the little aplochitonid to which I have given the name *Jenynseila weatherilli*. The small family *Aplochitonidae*, containing three (perhaps four) genera and seven species, was formed by Günther* in 1864 to accommodate three species of fishes, namely—*Aplochiton zebra* Jenyns,† from Tierra del Fuego and the Falkland Islands—*A. tæniatus* Jenyns,‡ from Tierra del Fuego—and *Protoctroctes maræna* Günther, from “Southern Australia.”§ To these the same author subsequently added *P. oxyrhynchus*|| from New Zealand. In 1882 Johnston¶ announced the discovery of a second Tasmanian aplochitonid from the Derwent River, to which he gave the name *Haplochiton sealii*, while in 1895 Weber** described as *Protoctes semoni* a species from the upper waters of the Burnett River, Queensland. To these six must now be added the interesting species described below. While there is nothing remarkable in finding a genus closely allied to *Aplochiton* inhabiting the rivers of Southern Tasmania, seeing that in distribution and habits the family closely resembles the *Galaxiidae*, it is distinctly perplexing to find the same genus resident in the low-lying coastal creeks of Southern Queensland, where the water is warm throughout the year. As among the galaxiids there are two well defined groups, the one with ornamental markings and containing the larger and stouter forms which grow to an edible size—*Galaxias* proper, with *truttaceus*, etc.—the other small and slender of uniform or nearly uniform coloration—*Austrocobitis*,†† with *attenuatus*, etc.—so in *Aplochiton* the same process is repeated on precisely analogous lines, *Aplochiton zebra*—which “is ornamented with irregular, transverse, zebra-like bands,” grows to over a foot long, and “is good eating”—representing the *Galaxias* group, while *A. tæniatus*, *Jenynseila weatherilli*, and *J. (?) sealii* similarly represent the *Austrocobitis* group. The

* B.M. Catal. Fish., v, p. 381.

† Jenyns, Voy. Beagle, iv, p. 131, pl. xxiv, fig. 1, 1842.

‡ Ibid., p. 132, fig. 2.

§ The species is found in South-eastern Australia and Tasmania only.

|| Günther, Proc. Zool. Soc., 1870, p. 152.

¶ Proc. Roy. Soc. Tas., 1882, p. 128.

** In Semon, Zool. Forsch., v, p. 274.

†† Ogilby, Proc. Linn. Soc. N.S. Wales, xxiv, 8, viii. 1899, p. 158. Tate Regan in his excellent “Revision of the Fishes of the Family *Galaxiidae*” (Proc. Zool. Soc., 1905, pp. 363 to 384, pll. x to xiii) disallows, I think wrongly, even subgeneric rank to this group.

coloration of *A. tæniatus* as given by Jenyns* is equally applicable to the two Australian species. There are, however, several differences, both of structure and habits, which can not be ignored between the American and the scaleless Australian members of the family. In the former the rayed dorsal fin is inserted close behind the ventrals and wholly in advance of the anal, the adipose fin is opposite to the anal; the pectoral is large, pointed, and asymmetrical, with 18 rays, the upper the longest, and inserted well up the side with a vertical base; and both species are inhabitants of fresh water only, Darwin, in his notes stating of *A. tæniatus* that "when put into salt water they immediately died."† In the Queensland‡ species on the contrary the rayed dorsal is inserted mostly above, the adipose dorsal well behind the anal fin; the pectoral is small, rounded, and symmetrical, with 9 to 12 rays, the middle the longest, inserted almost on the ventral edge with a subhorizontal base, and both the Australian species are anadromous. In one character *A. tæniatus* approaches *J. weatherilli*, namely—in both these species the ventral fins are inserted much nearer to the tip of the snout than to the base of the caudal, while in *A. zebra* it is midway between these points. Of *Aplochiton sealii* we learn from its discoverer that it "has the same migratory habits as *Retropinna richardsonii*" (= *Retropinna retropinna*), that "it appears in the upper waters of the Derwent in large shoals during the months of October and November" and that "the females are then in mature ova," thus proving that they are true anadromous fishes, running up at a fixed season from the estuaries into the fresh water for the purpose of depositing their spawn. Our single example was taken in August, a season which, presuming, as is most probable, that it also is anadromous, would correspond in temperature with the Tasmanian October.

* "Uniform greenish or olivaceous brown, the back and sides very minutely dotted with darker brown. There is a pale silvery band along the middle of the side, not bounded, however, by any definable line, but shading off insensibly into the brown above and below."

† Jenyns, *ibid.*, p. 133.

‡ I only know *Aplochiton sealii* from Johnston's description, and as that author omits all reference to the position and shape of the fins, with the exception of the rather ambiguous statement "Dorsal situated rather in advance of vent and behind ventral fin," we are left in doubt as to whether the affinities of the species are with *Aplochiton* or *Jenynsellia*; the small pauciradiate pectorals, however, agree with the latter, while if for "situated" in the above quotation we were to read "originating," all doubt as to its generic identity with *Jenynsellia* would be set at rest.

SILURIDÆ.

TACHYSURUS BROADBENTI sp. nov.

BROADBENT'S SEA-CATFISH.

D. i 7; A. 17. Depth of body $4\frac{1}{2}$ to $4\frac{3}{4}$, length of head $2\frac{4}{5}$ to 3 in the total length; width of head $1\frac{3}{5}$ to $1\frac{3}{4}$ in its length, the upper profile undulating and but little oblique. Diameter of eye $6\frac{3}{4}$ to 7 in the length of the head and $2\frac{1}{2}$ to $2\frac{2}{3}$ in that of the snout, which is broadly rounded or subtruncate and $1\frac{1}{6}$ to $1\frac{1}{4}$ time as wide as long. Interorbital region convex, its width $1\frac{1}{5}$ to $1\frac{1}{3}$ time that of the mouth and 2 to $2\frac{1}{3}$ in the length of the head. Premaxillary teeth in a continuous band, which is more or less emarginate behind, somewhat obtusely pointed at the extremities, and from $4\frac{1}{4}$ to 5 times as wide as long; vomerine groups very small and widely separated, deciduous with age; palatine teeth in two large, approximate, subovate groups, the inner borders of which are nearly parallel; each group is about twice as long as wide, and fully its own length from the premaxillary band; mandibular teeth in two short, widely separated, biserial or triserial bands. Maxillary barbel $1\frac{1}{2}$ to $1\frac{3}{5}$ in the length of the head, extending horizontally nearly to, to, or a little beyond the hinder border of the opercle; postmental barbel $\frac{3}{4}$ to $\frac{5}{7}$ of the maxillary barbel, inserted near to and but little behind the mental, which does not reach to the gill-opening. Cranial shield sparsely granulated, sometimes nearly smooth, the granulation not extending forward on the interorbital region nor downward to the gill-opening. Nuchal shield subtriangular, rather strongly keeled, coarsely granular, the granules disposed in regular series, which diverge posteriorly, its greatest width $2\frac{1}{2}$ to 3 in its length, which is 3 to $3\frac{1}{5}$ in its distance from the tip of the snout; outer border nearly straight, the hinder notched. Dorsal buckler moderate, subcrescentic, coarsely granular, its mesial length $5\frac{1}{2}$ to $6\frac{1}{4}$ in the nuchal shield, with which it is in contact. Fontanelle long and narrow, conspicuous; occipital groove not extending backwards to the nuchal shield. Opercles smooth. Humeral process smooth, well developed, broadly triangular, extending along the proximal $\frac{1}{6}$ to $\frac{3}{7}$ of the pectoral spine. Distance of dorsal fin from the tip of the snout $2\frac{1}{10}$ to $2\frac{1}{5}$ in the total length; dorsal spine, granular in front, very feebly serrated behind, the sides striated; its length $1\frac{1}{2}$ to $1\frac{3}{4}$ in that of the head. Adipose fin much higher than long, its base $2\frac{1}{2}$ to $2\frac{4}{5}$ in that of the rayed dorsal, its distance from which is $3\frac{1}{3}$ to $3\frac{1}{2}$ in the total length. Anal fin as high as or slightly higher than long, with the outer border feebly emarginate, its length $2\frac{3}{5}$ to 3 in that of the head. Upper caudal

lobe shorter than the head, $3\frac{1}{3}$ to $3\frac{2}{5}$ in the total length; least depth of caudal peduncle $\frac{2}{3}$ to $\frac{5}{8}$ of its length behind the adipose fin. Pectoral fin with 11 soft rays; the spine similar to that of the dorsal but stronger and more strongly serrated behind, $1\frac{3}{5}$ to $1\frac{3}{4}$ in the length of the head. Ventral fin obtusely pointed, its length 2 in that of the head, not quite reaching to the anal fin. Vent nearer to the ventral fins than to the anal. Gill-membranes meeting at a very obtuse angle, the free margin narrow; gill-rakers 3 + 8, the longest about $\frac{4}{9}$ of the diameter of the eye. Axillary pore minute. Dull leaden blue above, the sides and abdomen silvery; upper surface of head violet-brown; outer half of adipose fin dark brown; caudal yellowish. [Named for Mr. Kendall Broadbent, explorer and collector.]

Length to 410 millimeters.

Type in the Queensland Museum.

Cape York, Queensland.

The specimens, three in number, from which the description is drawn up, are in the Queensland Museum, and were collected many years ago by Mr. Kendall Broadbent, who has done such good work in elucidating the richness of the Queensland fauna. They are unfortunately in bad condition, having been partially skinned and deprived of the vertebral column,* and I have not, therefore, been able to make so accurate an examination as was desirable under the circumstances, but the characters given above are sufficiently distinct to justify its separation from *Tachysurus macrocephalus*,† which is its nearest ally. This species, which was originally described from two examples taken at Batavia, and which are indeed still unique, agrees with *Tachysurus broadbenti* in the large size of the head and the deciduity of the vomerine teeth; but differs from our species in the arrangement and shape of the groups of palatine teeth, which, according to both the description and figure given by Bleeker in his "Atlas Ichthologique" are strongly convergent posteriorly, instead of being parallel to one another; it also differs

* I would like to impress on collectors of fishes and reptiles that, no matter how great the difficulties of transport may be, at least one example of each species should be left intact; it is infinitely preferable to have one perfect specimen than a dozen imperfect.

† *Arius macrocephalus* Bleeker, Verh. Batav. Gen., xxi, 1846, p. 40, Batavia; Günther, Catal. Fish., v. p. 155, 1864.

Ariodes macrocephalus Bleeker, Ichth. Arch. Ind. Prodr., Silur. p. 85; and Atl. Ichth., ii, p. 39, pl. lviii, 1862.

Length to 460 millimeters.

Type in the South Kensington Museum.

Java.

in the comparative broadness of the nuchal shield, the length of which is only twice its width; in the more pronounced occipital granulation; the stronger dorsal spine; and the increased number (20 or 21) of anal rays.

From the only other Australian species, *Tachysurus meyenii*,* it differs as follows:—

- a. Head large, $\frac{1}{3}$ or more than $\frac{1}{3}$ of the total length; vomerine teeth in small number, deciduous; palatine patches subovate, about twice as long as wide, the tips not divergent posteriorly; nuchal shield coarsely granular; dorsal buckler narrow; anal fin not higher than long; caudal fin shorter than the head BROADBENTI.
- aa. Head small, $\frac{2}{7}$ or less than $\frac{2}{7}$ of the total length; vomerine teeth in moderate number, permanent; palatine patches elongate and curved, about 4 times as long as wide, the tips divergent posteriorly; nuchal shield smooth, or nearly so; dorsal buckler rather wide; anal fin higher than long; caudal fin longer than head MEYENII.

NEMAPTERYX gen. nov.

Lateral line without anterior granulation. Head moderately depressed, wider than deep. Mouth rather large, crescentic, the upper jaw projecting and of normal width; no rictal lobe. Jaws with bands of villiform teeth; roof of mouth with villiform teeth on the vomer and palatines, the groups separate. Posterior nasal orifices not connected by membrane. Maxillary barbels long and slender. Eye rather small, lateral, with partially adnate lid; a deep preorbital cavity. Dorsal buckler rather large and subcruciform, continuous with the nuchal shield. Gill-openings moderate, wider than the isthmus; six branchiostegals, the first not dilated; gill-rakers short and stout, in moderate number. Axillary pore minute. Rayed dorsal fin opposite to the space between the pectorals and ventrals, the first ray produced in a long filament; adipose fin rather large, inserted wholly above the anal. Occiput rounded; nuchal crest strongly developed. Occipital fontanelle narrow; a temporal foramen. [$\nu\eta\mu\alpha$, a thread; $\pi\epsilon\rho\nu\acute{\xi}$, a wing or fin.]

Type *Arius stirlingi*.†

Northern and North-Eastern Australia.

The position of the genus would naturally fall between *Hexanematichthys* and *Hemiarius*.

* *Ariodes meyenii* Müller & Troschel, Horæ Ichth., iii, p. 9, 1849. Hab. Java. Singapore, Celebes.

† Ogilby, Proc. Linn. Soc. N.S. Wales, xxiii, 1898, p. 281.

PLOTOSIDÆ.

ANYPERISTEUS gen. nov.

Lips thin. Teeth small, crowded, recurved, none of them with rounded tips, the outer series in both jaws enlarged and conical. Barbels long. Eyes small. Dorsal fin originating a little behind the gill-opening, with 4 rays. Caudal fin obliquely truncated. Pectoral and ventral fins each with 9 soft rays. (*ἀ* privative; *ὑπέρ*, above; *ιστίον*, a sail: in allusion to the absence of the second dorsal fin.)

Fresh water cat-fishes of small size from southern New Guinea. One, perhaps two, species. Type *Anyperistius perugiæ* Ogilby = *Eumeda elongata* Perugia (not Castelnau).

The genus, to which I have been obliged to give the new name proposed above, is founded on specimens of less than five inches in total length and in all probability immature.

The form of the inner teeth differs so materially from that which is found in the *Eumeda* of Castelnau (described also from an immature fish), that there can be no question as to the generic distinctness of the two forms. Castelnau's description of the dentition of his *Eumeda* is as follows:—"Teeth on both jaws numerous, crowded, and *tubercular*,* with a line of sharp conical ones in front." Overlooking his neglect in omitting to mention the vomerine teeth this agrees fairly well with the dental characters of a young *Neosilurus*, but in no degree resembles the *recurved** inner teeth attributed to his species by Perugia, and absolutely unique among the plotosids. If it were not for this character I would unhesitatingly assign Perugia's fish, along with Castelnau's to the genus *Neosilurus*, as the remaining diagnostic characters enumerated above, and on which I have to rely, are either of trivial value, or, the genera being admitted identical, of specific importance only; or may perhaps be due to the immaturity of the specimens available for examination. Of these characters the most important is the allegedly small number of ventral rays, which, if given correctly, is without parallel in the family; the value of this character is, however, somewhat discounted by the difficulty, if not impossibility, of accurately computing the number of the rays in these fins without resorting to dissection.

* The italics are mine.

Of this difficulty Perugia records his own experience when endeavouring to enumerate the much more conspicuous anal rays of *Lambertia*; it is possible, therefore, that he has failed to detect some of the shorter and more delicate rays.*

NEOSILURUS MEDIOBARBIS sp. nov.

NARROW-FRONTED TANDAN.

1 D. i 6. 2 D. + C. + A. 118.

Skin covered with a network of fine anastomosing tubules. Lateral line with a series of enlarged tubular papillæ. Depth of body 5, length of head $4\frac{1}{2}$ in the total length. Head with small, crowded, wart-like papillæ intermixed with larger ones, its width $1\frac{3}{5}$ in its length, which is $1\frac{2}{3}$ in the trunk. Diameter of eye rather less than 6 in the length of the head and $2\frac{7}{8}$ in that of the snout, which is broadly rounded and a little narrower than long. Interorbital region convex, its width subequal to that of the mouth and $2\frac{1}{2}$ in the length of the head. Each group of premaxillary teeth nearly twice as wide as long at the symphysis; vomerine group subovate, $1\frac{1}{2}$ time as wide as long mesially; mandibular groups subtriangular, each $1\frac{1}{2}$ time as wide as long, with the outer extremity forming an obtuse point; tips of teeth not or but little discolored. Barbels moderate, the nasal reaching to beyond the middle of the eye, its length 2 in that of the head; maxillary barbel reaching to the posterior border of the eye; postmental barbel extending horizontally backwards far beyond the gill-opening, $1\frac{1}{2}$ in the length of the head; mental barbel longer than the maxillary. Predorsal length $3\frac{1}{2}$ in the total length; dorsal spine straight, smooth in front, serrated behind, the teeth directed upwards,† its length $1\frac{2}{3}$ in that of the head; longest soft ray as high as the body below it; second dorsal fin with 26 rays, equaling the head in length. Caudal fin with 10 rays, $6\frac{2}{3}$ in the total length. Anal fin with 82 rays, its distance from the tip of the mandible, $2\frac{3}{5}$ in the same. Pectoral fin with i 10 rays, the spine straight, smooth in front, strongly serrated behind, a little longer than the dorsal spine; the appressed rays reach backwards to the ventral fin. Ventral pointed, with 13 rays, its length 2 in that of the head. Gill-rakers 8 + 21, the

* Another solution of the difficulty presented by the abnormally large number of pectoral rays in *Lambertia* and the similarly small number of ventral rays in *Anyperistius* occurs to one's mind, but hardly seems plausible enough; it is that by some unfortunate mischance the numbers were confused by their describer, and the fin formulas of the two genera should read respectively P. 9, V. 13 and P. 9, V. 14 instead of P. 14, V. 13 and P. 9, V. 9. This would bring them into conformity with the other fluviatile genera of the *Tandanus* type.

† This character is so peculiar that I can hardly believe in its constancy.

longest $1\frac{2}{3}$ in the diameter of the eye. Axillary pore large. Brown, lighter below (*medius*, moderate; *barbus*, barbel).

Length of type 288 millimeters.

Type in the Queensland Museum, Brisbane.

? Queensland.

It is with some hesitation that I have decided to describe as a valid species the solitary specimen which I have had the opportunity of examining, and of whose exact habitat even I am unaware; and all the more so that I am so deeply impressed with the confusion, which has been caused in the history of the fluviatile eel-catfishes by previous crude and inadequate descriptions of supposed new forms. Nevertheless the example here described differs in so many small but not unimportant particulars from a *Neosilurus hyrtlii* of the same size that I have no option but to consider them distinct.

NEOSILURUS ROBUSTUS.

HAIRYHEADED TANDAN.

Skin mostly smooth, anteriorly with closely set hair-like filaments. Depth of body $3\frac{4}{5}$, length of head $4\frac{1}{2}$ in the total length. Head with scattered, wart-like papillæ, its width $1\frac{2}{3}$ in its length, which is 2 in the trunk. Diameter of eye $5\frac{1}{4}$ in the length of the head and $2\frac{1}{5}$ in that of the snout, which is obtusely pointed and wider than long. Interorbital region flat, its width much greater than that of the mouth and $2\frac{1}{2}$ in the length of the head. Each group of premaxillary teeth about thrice as wide as long at the symphysis; vomerine group crescentic, $1\frac{2}{3}$ time as wide as long mesially; mandibular groups subovate, each about $1\frac{1}{2}$ time as wide as long, the outer extremity forming an obtuse point; all the teeth more or less conspicuously tipped with brown. Barbels short, the nasal not quite reaching to the eye, its length 3 in that of the head; maxillary barbel reaching to the middle of the eye; postmental barbel extending horizontally backwards to the gill-opening, $2\frac{3}{5}$ in the length of the head; mental barbel subequal to the maxillary. Predorsal length 3 in the total length; dorsal spine curved, smooth in front, feebly serrated behind, the teeth directed outwards, its length $1\frac{4}{5}$ in that of the head; longest soft ray not nearly so high as the body below it: second dorsal fin short. Anal fin with about 82 rays, its distance from the tip of the mandible $2\frac{1}{5}$ in the total length. Pectoral fin with 10 rays, the spine similar to that of the first dorsal, the soft rays when appressed not quite reaching to the ventral fin. Ventral rounded, with 12 rays, its length 2 in that of the head. Gill-rakers

6 + 16, the longest $1\frac{3}{5}$ in the diameter of the eye. Axillary pore moderate. Brown, lighter below (*robustus*, stout).

Length of type, without caudal fin, 278 millimeters.*

Type in the Queensland Museum, Brisbane.

Keppel Bay, Queensland.

The specimen on which I have founded the present species, has been the source of no inconsiderable anxiety to me. In two important characters it departs materially from the type of *Neosilurus* as exemplified by the typical *N. hyrtlii*, and in both it exhibits a marked approach to the *Tandanus* type. These characters are—(1) the presence of dermal filaments on the head and body and (2) the approximation in the length of the trunk and tail. Another circumstance also requires comment, and cannot fail to strengthen the doubt as to the validity of its claim to specific rank, namely, that it was forwarded from the same locality, by the same collector, and presumably at the same time as an undoubted specimen of *Neosilurus hyrtlii*. When, therefore, it is taken into account that both that species and *Tandanus tandanus* are common fishes of the Fitzroy River and its tributaries (which drain into Keppel Bay), it will not seem preposterous to suggest that we may perhaps be dealing with a hybrid between the two forms.

Analysis of the species of Neosilurus.

- a. Barbels long, the nasals reaching to the origin of the first dorsal fin.
 - 1. *brevidorsalis*.
- aa. Barbels short, the nasals not reaching beyond the eye.
 - b. Skin without filaments; depth of body $4\frac{1}{2}$ or less in the total length; preanal length less than $2\frac{1}{2}$ in the same.
 - c. Width of interorbital region subequal to that of the mouth; postmental barbel reaching well beyond the gill-opening; gill-rakers 29; first dorsal fin as high as the body below it ... 2. *mediobarbis*.
 - cc. Width of interorbital region much greater than that of the mouth; postmental barbel not reaching to the gill-opening; gill-rakers 20 or 21; first dorsal fin not so high as the body below it ... 3. *hyrtlii*.
 - bb. Skin anteriorly with criniform filaments; depth of body more than 4 in the total length; preanal length $2\frac{1}{2}$ in the same.
 - d. Width of interorbital region much greater than that of the mouth; postmental barbel not reaching to the gill-opening; gill-rakers 22; first dorsal fin not nearly so high as the body below it
 - 4. *robustus*.

* The second dorsal and caudal fins and the extremity of the anal fin are much injured.

APLOCHITONIDÆ.

JENYNSELLA gen. nov.

Body elongate and subfusiform, scaleless. Lateral line represented by a series of small pores along the middle of the sides. Head small and subconical, its upper profile feebly convex; snout short and rounded. Mouth terminal, with narrow, oblique cleft, the jaws equal. A single series of small, stout, conical teeth in each jaw; vomer toothed; palatines toothless. Nostrils large and open, contiguous. Eyes of moderate size, anteromedian, lateral. Rayed dorsal fin originating above the anus, with 9 rays, its posterior rays opposite to the anal fin; adipose dorsal wholly behind the anal fin: anal fin with 14 rays: caudal deeply forked: pectoral small, rounded, symmetrical, inserted very low, almost on the ventral profile below the gill-opening, with 9 rays, the middle the longest: ventrals rounded, with 7 rays, inserted close together and much nearer to the tip of the snout than to the base of the caudal. Gill-openings wide; gill membranes separate, free from the isthmus; five branchiostegals; pseudobranchiæ large; gill-rakers in small number, stout, and conical. Genital papilla very large. [Named for the Rev. Leonard Jenyns, author of the *Fishes of the Beagle* and founder of the allied genus *Aplochiton*].

Southern Queensland and ? Tasmania.*

Type *Jenynsellia weatherilli*.

JENYNSELLA WEATHERILLI sp. nov.

QUEENSLAND SMELT.

D. 9; A. 14; P. 9; V. 7. Ventral profile more arched than that of the dorsal; width of body $1\frac{2}{3}$ in its depth, which is $5\frac{1}{3}$ in its length. Head compressed, its length $4\frac{1}{4}$ in that of the body. Snout short and blunt, rounded above, its length $\frac{3}{4}$ of the diameter of the eye, which is rather more than $\frac{1}{3}$ of the length of the head. Inter-

* Johnston's brief description of *Haplochiton sealii* gives, as previously mentioned, no clue as to the generic affinity of that species; but on the supposition that the two Australian species are congeneric, I give the following synopsis by which they may be easily distinguished—

a. Body very slender, its depth 10 in the total length;† head depressed; anal fin long, with 19 or 20 rays SEALII

aa. Body comparatively robust, its depth more than 7 in the total length;† head compressed; anal fin shorter, with 14 rays WEATHERILLI

† From tip of snout to extremity of caudal fin.

orbital region convex, its width $3\frac{1}{3}$ in the head. Maxillary extending to the vertical from the anterior border of the pupil. Space between origin of dorsal and root of caudal $1\frac{3}{4}$ in its distance from the tip of the snout; length of dorsal fin $\frac{5}{6}$ of its height: adipose dorsal inserted much nearer to the caudal than to the rayed dorsal and wholly behind the anal. Anal fin commencing a little behind the origin of the dorsal and much nearer to the origin of the ventral than to the caudal, as high as and $1\frac{1}{2}$ time as long as the rayed dorsal. Caudal emarginate, the middle rays $\frac{5}{7}$ of the outer, which are $5\frac{1}{2}$ in the length of the body: caudal peduncle slender, its least depth $2\frac{5}{6}$ in the depth of the body. Pectoral rounded, $1\frac{1}{3}$ in the head. Ventral inserted midway between the tip of the snout and the last anal ray, its length $1\frac{1}{2}$ in the head. Yellowish brown, with an ill-defined paler longitudinal band from the eye to the middle of the tail; distal half of tail with a dark median streak, which expands posteriorly to form a dusky blotch at the base of the caudal; upper surface densely powdered with blackish dots; opercles with larger dots; a series of similar dots at the bases of the rayed dorsal and anal. [Named for William Edward Weatherill, its collector].

Type in the Queensland State Museum.

Total length 57 millimeters.

Streams near Brisbane.

* Differs from *Aplocheilichthys sealii* Johnston,* in the much deeper body, the compressed and longer head, the shorter snout, larger eye, and shorter maxillary, the decreased number of anal rays, etc.

Described from a single specimen collected by Mr. W. E. Weatherill in Enoggera Creek during August, 1906.

SYNGNATHIDÆ.

CORYTHOICHTHYS SPINICAUDATUS sp. nov.

THORN-TAILED PIPE-FISH.

Osseous rings 16 + 30. Body heptagonal and rather stout, its width $1\frac{2}{3}$ in its depth, which is less than the postorbital portion of the head. Frontal region of head obliquely linear; length of head $3\frac{2}{3}$ in the preanal length, which is $1\frac{4}{5}$ in the length of the tail. Snout curved upwards anteriorly, with a moderate keel above and below, half as long as the rest of the head. Occipito-nuchal carina originating on a level with the posterior border of the orbits and terminating at the end of the 1st. body ring; it is moderately developed and divided by notches into three subequal sections; supra-

* Proc. Roy. Soc. Tas., 1882, p. 128.

ciliary ridges short, not extending backwards to opposite the middle of the occipital section; opercular ridge low. Dorsal profile linear; all the divisions of the body transversely concave, the ridges moderately prominent; dorsal ridge feebly spinigerous, terminating on the 2nd. caudal ring; lateral ridge curved, continuous with the lower caudal ridge; abdominal ridge ceasing on the anal ring; upper caudal ridge commencing on the anal ring; all the caudal ridges strongly spinigerous throughout their entire length. Dorsal fin inserted upon 2 body and 3 caudal rings, with 22 rays, the base not elevated, its length equaling the head from the tip of the upper jaw. Caudal fin with 10 rays, $3\frac{3}{4}$ in the length of the head. Pectoral with 14 rays, reaching upon the 2nd. body ring. Ovisac occupying 14 rings, its length $\frac{1}{2}$ of that of the tail. Pale olivaceous brown the head lighter. [*spina*, spine; *caudatus*, tailed].

Type in the Queensland State Museum.

Total length 57 millimeters.

Described from an adult male with distended egg-pouch, collected at Cape York by Mr. Kendall Broadbent.

Closely allied to *C. brevirostris*, but differing in the stronger cephalic ridges, the more numerous osseous rings and dorsal rays, the more anterior origin of the dorsal fin, the spinigerous tail, etc.

HIPPOCAMPIDÆ.

HIPPOCAMPUS DAHLI sp. nov.

DAHL'S SEA-HORSE.

Dorsal fin with 20 or 21 rays, inserted upon 3 body and 1 tail rings. Rings 11 + 40 or 41. Body slender, its depth $1\frac{2}{3}$ to 2 in the length of the head. Diameter of eye $3\frac{1}{2}$ to 4 in the length of the snout, which is $1\frac{4}{5}$ to 2 in the length of the head and much longer than its postorbital portion. Frontal ridges low, convergent anteriorly, descending gradually to their point of junction on the snout. Supraorbital spine moderate, blunt, with the tip more or less coarsely granulose, directed outwards and backwards; no postorbital, suborbital, or temporal spines. Coronet low, preceded by a rather short ridge, which terminates in a slightly hooked spine; its summit is surrounded by three pairs of low, blunt, finely denticulated tubercles with an unpaired, median, hooked spine posteriorly; height of coronet one fourth of the length of the snout. Nuchal ridge high, with irregular granulose profile. Opercle with delicate, divergent striæ. Pectoral arch with 3 widely separated tubercles, the lower the most prominent. Trunk 7-ridged; all the

ridges, but especially the median abdominal, armed with well developed, subacute tubercles. The three posterior dorsal rings elevated above the others. Dorsal ridge of tail not continued on the body rings; ventral ridge continuous with but on a lower plane than the lateral body ridge, without cessation of tubercles. Base of dorsal fin as long as or somewhat shorter than the snout. Preamal length about $\frac{4}{5}$ of that of the tail. Brown, the sides of the abdomen with a golden tinge; snout and sides of the head dull leaden blue in fresh specimens; tips of the trunk tubercles light-colored, forming bands. Dorsal fin with a dark basal band. Irides white. [Named for Mr. Christian Dahl, who first sent me a specimen].

Length of largest (type) example 105 millimeters.

Type in the Queensland Museum, Brisbane.

Coast of southern Queensland.

Dahl's Sea-Horse is related to the Chinese and West Malayan *H. trimaculatus** from which it differs in the greater length of the dorsal fin, the increased number of caudal rings, the more slender body, the greater number of coronal spines, etc.; also to the *H. subelongatus*† of West Australia, from which it may be distinguished by the increased number of dorsal rays, the shorter snout, the lower coronet, etc.

On recognizing that Mr. Dahl's fish belonged to a hitherto undescribed species I made an examination of the specimens of *Hippocampus* contained in the collection of the Queensland Museum, with the result that I discovered two other examples. One of these was labeled "*Hippocampus subelongatus* Cast.; Moreton Bay; Donor, Mr. G. Watkins"; the other "*Hippocampus lenis* de Vis; Noosa; Donor, Mrs. Birkbeck." This latter is merely a museum name, no description having ever been made; nor can I accept the name, since, the annular spines being well developed, it would be unsuitable. The Noosa specimen, however, being the largest and finest of the three which I have utilized in drawing up the above description, I have selected as the type of the species. Mr. Dahl's example was found attached to a branch of seaweed, which was coiled round the anchor line of a boat in Moreton Bay; it is a half-grown male, and has been placed in the collection of the Queensland Amateur Fishermen's Association.

* *Hippocampus trimaculatus* Leach, Zoöl. Misc., p. 104=*H. mannulus* Cantor, Catal. Malay. Fish., p. 388, pl. xi. fig. 1, 1850.

† *Hippocampus subelongatus* Castelnau, Proc. Zoöl. & Acclim. Soc. Vict., ii, 1873, p. 145.

MUGILIDÆ.

MUGIL STEVENSI sp. nov.

STEVENS' GRAY MULLET.

* Sc. 31—11. Dorsal contour feebly arched, much less so than the ventral; greatest depth, below the spinous dorsal, $3\frac{2}{5}$, length of head 4 in the length of the body. Upper profile of head moderately convex to between the eyes, linear and but little oblique behind them. Upper lip thin and curved, with its upper edge continuous with the snout, the depth of its vertical portion less than half the diameter of the eye; lower border formed by a pair of convex lobes, separated by a moderate symphysial notch. Jaws with a single series of fine cilia. Maxillary extending to below the posterior nostril, curved downwards and slightly swollen distally, entirely hidden beneath the preorbital. Snout broad, emarginate in front, scaly, $\frac{5}{6}$ of the diameter of the eye, which is $3\frac{2}{3}$ in the length of the head. Adipose eyelid narrow anteriorly, much wider and almost reaching the iris posteriorly. Interorbital region convex, its width 2 in the length of the head. Preorbital scaly, its outer border forming a widely obtuse angle, denticulated throughout its entire length with the exception of a short, smooth area immediately in front of the distal angle; the denticles increase in size posteriorly, those behind the angle, especially the last three, being very strong; it forms an acute angle with the distal border, which is feebly convex and finely serrated. Depth of cheek below the middle of the eye $\frac{2}{3}$ of the diameter of the eye. Rami of lower jaw meeting at a widely obtuse angle, separated by a deep mesial groove, and naked anteriorly. Free intermandibular space rather small and cuneiform. Angle of preopercle produced; interopercles in contact; opercles smooth. Spinous dorsal originating above the 11th. body-scale and nearer to the base of the caudal than to the tip of the snout; spines strong, the 1st. much higher than the 2nd. and $1\frac{2}{5}$ in the length of the head: soft dorsal originating above the 20th. body-scale, its distance from the origin of the spinous equaling the head. Anal originating below the 17th. body-scale; space between its origin and that of the soft dorsal rather more than the head; basal length $\frac{2}{3}$ of its distance from the caudal. Caudal emarginate, with 12 branched rays, the middle pair about $\frac{2}{3}$ of the outer and $5\frac{1}{2}$ in the

* The dorsal and anal fins are so much injured that it is impossible to count the number of soft rays.

length of the body : caudal peduncle long and strong, its length $6\frac{3}{4}$, its least depth $7\frac{1}{3}$ in the length of the body. Pectoral inserted nearer to the dorsal than to the ventral profile, with 16 rays, the 4th. the longest, reaching to the 8th. body-scale and $5\frac{3}{5}$ in the length of the body, space between its tip and the origin of the spinous dorsal $\frac{1}{5}$ of its length. Ventral inserted a little nearer to the anal than to the tip of the mandible, and below the middle 3rd. of the pectoral, its length $1\frac{3}{5}$ in the head. Scales of preorbitals cycloid, of cheeks and lower surfaces finely ciliated ; scales in 6 series between the eye and the angle of the interopercle, two of which are on that bone ; 18 scales in front of the spinous dorsal ; 9 scales in an oblique series from the origin of the soft dorsal to far behind the anal. Gill-rakers 61 on the lower branch of the anterior arch, the longest $\frac{2}{3}$ of the diameter of the eye. Greenish brown above, lighter on the sides and below ; tips of caudal rays dusky. [Named for Mr. James Hirst Stevens, Inspector of Fisheries for the State of Queensland].

Length [of type] to tip of middle caudal rays 165 millimeters.

Type in the Queensland Museum.

Gold Island, Rockingham Bay.

Nothing is known of the habits of this mullet, the only specimen having been collected many years ago by Mr. Kendall Broadbent ; it is in very bad condition, parts of all the soft fins being broken off and the head injured ; the salient characters are, however, sufficiently preserved to enable us to see at a glance that nothing resembling it has hitherto been recorded from Australian seas and to draw up the above description. Notwithstanding that the type was obtained in the open bay its habit and affinities all point to this being a small estuarine or even fresh-water species, and we are, therefore, inclined to think that specimens would be more easily procurable in the Herbert River than at Gold Island.

The nearest ally of this mullet is the fish described and figured by Day* as *Mugil dussumieri*, the distribution of which is given as "Seas of India, entering fresh water." From the wording of his remarks below the descriptions of both that fish and *M. subviridis* we may infer that Day examined the types of both species in the Paris Museum. This was undoubtedly necessary for if we were obliged to rely on the respective descriptions alone we would never have dreamt of associating the *M. dussumieri* of Day with the fish described under the same name by Valenciennes as having "the snout compressed and wedge-shaped ; the preorbital keeled and folded upon itself ; and the anterior adipose eyelid larger than the

* Fish. India, p. 352, pl. lxxiv, fig. 4, 1876.

posterior.”* The latter character, which is exactly opposed to fact, Valenciennes thought so highly of that he remarks “This arrangement appears to me to be characteristic of this species.”† The single character on the strength of which Day separates *M. subviridis* from *M. dussumieri*, namely, the absence or presence of teeth in the upper jaw, is, we consider, valueless, since we have found it equally variable in our *M. georgii*; consequently the correct name by which the species should be known is *Mugil subviridis*. Day, furthermore, places in the synonymy of *M. dussumieri*, both *M. subviridis* Günther and *M. nepalensis* Günther; as regards the latter species we are quite in accord with the author of the “Fishes of India,” but we must join issue with him as to the former. Throughout his whole classification of the family Günther very properly lays great stress on the number of soft anal rays as a valuable character in the differentiation of the species; now, having a Madras example before him, he unhesitatingly records it as having but eight soft rays; it cannot, therefore, be identical with *M. dussumieri*, which, like his own *M. nepalensis*, has nine; and since Day, after examining the types, assures us that each of the two Cuvierian species have also nine, it follows that it cannot be either of them; there are besides other differential characters between the two species. For instance in Günther’s fish the mouth is much wider, both adipose eyelids are well developed, the outer edge of the preorbital is apparently smooth, the spinous dorsal is inserted further back above the eleventh body scale; the caudal peduncle is deeper, the pectoral fin shorter, &c. The mullet, therefore, described by Günther is at present without a name and might with propriety be separated as *Mugil alcocki*, in commemoration of the splendid work accomplished by the present Superintendent of the Indian Museum.‡ Our species, which is the

* “Le museau est comprimé en coin; le sous-orbitaire est carené, plié sur lui-même; au-devant de l’œil, on voit une peau épaisse adipeuse, qui ne s’avance pas assez sur cet organe pour lui servir de voile: il y a aussi un peu d’adiposité près de l’autre angle.”

† “Cette disposition me paraît caractéristique dans cette espèce.”

‡ The synonymy of the two Indian fishes should then be as follows:—

1. MUGIL SUBVIRIDIS.

Mugil subviridis Cuvier & Valenciennes, Hist. Nat. Poiss., xi, p. 115, 1836: Pondicherry; River Ganges—Day, Fish. India, p. 353, 1876.

Mugil dussumieri Cuvier & Valenciennes, ibid., p. 147, 1836: Bombay—Day, Fish. India, p. 352, pl. lxxiv, fig. 4, 1876: Seas of India, entering fresh water; River Hooghly.

Mugil nepalensis Günther, B.M. Catal. Fish., iii, p. 424, 1861: Fresh waters of Nepal.

2. MUGIL ALCOCKI.

Mugil subviridis Günther, B.M. Catal. Fish., iii, p. 423, 1861: Madras—Day, Fish. Malabar, p. 138, 1865. Not of Cuvier & Valenciennes, 1836.

eastern analogue of *M. subviridis* differs among other characters from that species in its deeper body ($4\frac{1}{3}$ in total length with the caudal), more convex snout, ciliated jaws, concealed maxillary; scaly snout, larger eye, wider and convex interorbital region, posterior insertion of spinous dorsal, etc. It is noteworthy that neither Cantor nor Bleeker have recorded any mullet having the first dorsal spine prolonged from any part of the Malay Peninsula and Archipelago.

MUGIL NORTONI sp. nov.

NORTON'S GRAY MULLET.

Mugil longimanus Steindachner, Denk. Akad. Wien, xli, 1879, p. 5: Port Jackson—Klunzinger, Sitzb. Akad. Wien, lxxx, i, 1879, p. 395: Cleveland Bay—Macleay, Proc. Linn. Soc. N. S. Wales, ix, 1884, p. 41—Ogilby, Catal. Fish. N. S. Wales, p. 41, 1886—Kent, Class. List. Queensl. Food-Fish., App. A, p. 370, 1893. Not of Günther 1861.

Mugil cunnesius Waite, Synops. Fish. N. S. Wales, p. 22, 1904. Not of Cuvier & Valenciennes 1836.

D. iv, i 8; A. iii 9. Sc. 32 to 34—12. Dorsal and ventral contours of body equally and moderately arched; greatest depth, below the spinous dorsal, $3\frac{1}{4}$ to $3\frac{2}{5}$, length of head $3\frac{1}{5}$ to $4\frac{1}{5}$ in the length of the body. Upper profile of head gently rounded, as oblique as the lower. Upper lip thick, its exposed edge vertical, its depth $\frac{4}{5}$ of the longitudinal diameter of the pupil; lower border formed by a pair of feebly convex lobes separated by a symphysial notch. Jaws with a single series of fine cilia. Maxillary extending to below the posterior nostril, bent downwards distally, slender, and entirely hidden beneath the preorbital. Snout rather broad, rounded in front, feebly convex above, naked, $\frac{5}{6}$ of the diameter of the eye, which is $3\frac{2}{3}$ in the head. Adipose eyelid small, extending over less than half of the iris in front and behind. Interorbital region convex, its width $2\frac{2}{5}$ in the length of the head. Preorbital naked, its outer border deeply notched posteriorly, feebly serrated, forming a rectangle with the distal border, which is truncated and finely denticulated. Depth of cheek below the middle of the eye $\frac{4}{7}$ of the diameter of the eye. Rami of lower jaw meeting at a slightly obtuse angle, separated by a deep mesial groove, and almost wholly scaly. Free intermandibular space small, cuneiform with the sides curved outwards in the posterior half, and about 4 times as long as wide. Angle of preopercle somewhat produced; interopercles in contact; opercles smooth. Spinous dorsal originating above the 13th. body-scale and

nearer to the base of the caudal than to the tip of the snout; spines feeble, the 1st. a little the highest, $1\frac{3}{4}$ to $1\frac{1}{2}$ in the length of the head: soft dorsal originating above the 24th. body-scale, higher than the spinous dorsal, the distance between their origins as long as the head; outer border feebly emarginate, the last ray a little longer than the penultimate. Anal originating below 21st. body scale, and rather higher than the soft dorsal, the space between its origin and that of the soft dorsal slightly longer than the head, its basal length equal to or rather less than its distance from the caudal; outer border emarginate, the posterior ray produced. Caudal emarginate, with 12 branched rays, the middle pair $\frac{1}{3}$ of the outer and $4\frac{1}{4}$ in the total length: caudal peduncle strong and deep, its length $6\frac{1}{3}$, its least depth 7 in the length of the body. Pectoral inserted nearer to the dorsal than to the ventral profile, with 17 rays, the 3rd. the longest, extending to the 11th. body scale, and $\frac{1}{2}$ to $4\frac{1}{2}$ in the length of the body; space between its tip and the origin of the spinous dorsal $3\frac{1}{2}$ to 4 in its length: axillary scale foliate, not so long as the eye. Ventral inserted nearer to the anal than to the tip of the mandible, and below the middle third of the pectoral, its length $1\frac{1}{2}$ in the head. Scales of cheeks and lower surfaces finely ciliated; scales in seven series between the eye and the angle of the interopercle, two of which are on that bone; opercular scales in three series, much larger than the body scales; 20 scales in front of the spinous dorsal; 9 scales in an oblique series from the origin of the soft dorsal to behind the anal. Gill-rakers 58 on the lower branch of the anterior arch, the longest about $\frac{2}{5}$ of the diameter of the eye. Brown above, silvery on the sides and below; a small black axillary spot; soft dorsal and caudal fins with blackish tips. [Named for the Hon. Albert Norton, M.L.C., late Chairman of the Board of Trustees of the Queensland Museum].

Length of type to tip of middle caudal rays 168 millim.

* Type in the Queensland Museum.

Eastern Australia.

The gray mullet, described in 1861 by Dr. Günther as *Mugil longimanus*, has proved a fruitful source of confusion to all subsequent students of the Indian, Malaysian, and Australian members of the family. This confusion was partly and primarily caused by an inexcusable mistake of Dr. Bleeker, partly through the

inadequacy of the original description, and partly through the unfortunate tendency, which is prevalent among many recent writers, of blindly following the dictum of some previous author, without personally sifting the evidence for and against in every obscure case, and, when possible, by personal examination verifying or contravening it. We trust, therefore, that the following remarks will be of some value in clearing up the confused synonymy of the species under consideration.

In the year 1803 Dr. Patrick Russell published his "Fishes of Vizagapatam"; in this work three species of gray mullets were described and figured under the native names "*Bontah*," "*Kunnesees*," and "*Peddaraki Sovere*"; it is with the second of these that we are now concerned. At the beginning of the nineteenth century no special importance was attached to the number of scales on or above the lateral line, and we therefore find that neither Russell, nor subsequently Cuvier & Valenciennes, make any reference to this important character; from this omission rose all the subsequent confusion. It is, then, necessary to ascertain whether from the figures of the two remaining species (respectively *M. oeur* and *L. waigiensis*) we can deduce sufficient reliable data to enable us to fix with some degree of accuracy the number of transverse series of scales in the *kunnesees*. A glance at the figures will show that owing to the over-attenuation of the posterior caudal scales the numbers in both these figures are considerably in excess of what we know them to be in fact. Thus in *Mugil oeur* we have ascertained from actual examination that the number varies from 42 to 44 and in *Liza waigiensis* from 26 to 27, the corresponding numbers in Russell's figures being 51 (computing 6 for the space covered by the fin that being the same number contained in a similar succeeding space) and 35, or in each case from 7 to 8 or 9 extra scales, although one is a small-scaled, the other a large-scaled species; inferentially, therefore, we may conclude that a similar reduction of 7 to 9 scales from the number figured over "*Kunnesees*" will give us the approximate number of transverse series in that fish. In Russell's figure 52 scales are shown, which by the application of the above rule would give us a fish with from 43 to 45 series of scales. Dr. Cantor, who, next after Valenciennes, gave a detailed account of this mullet, had many opportunities of observing and examining it in various parts of the Malay Peninsula and Archipelago and

describes it as having 42 or 43 lateral scales, a number which Günther afterwards verified from an examination of Cantor's specimens then deposited in the British Museum. There is, therefore, we contend, no evading the fact that the fish figured by Russell and subsequently described by Cantor and Günther has at least 42 scales between the upper angle of the opercle and the base of the caudal, and is the true *Mugil cunnesius* of Cuvier and Valenciennes, whose specimens came from the Moluccas and Bombay. Meanwhile, however, Bleeker in 1852, disregarding the evidence of Russell's figure and the descriptions of the French savants and of Cantor, applied the name *Mugil cunnesius* to a Mayalan mullet having but 35 series of scales, and eight years later persisted in this mistake. In the year following Bleeker's second publication Günther's classification of the MUGILIDÆ appeared in the third volume of the "British Museum Catalogue of Fishes," and the author, perceiving the glaring inconsistency of Bleeker's proceeding, very properly separated the large-scaled form as *Mugil longimanus*. It seemed now that the relationship between the two species was fully delimited, and doubtless such would have been the case but for the subsequent action of Dr. Day. This author in his "Fishes of Malabar," 1865, following Cantor and Günther, described *M. cunnesius* as having 41 to 43 lateral series of scales and in the same work applies to the fish previously called *M. longimanus* by Günther the name *Mugil engeli*, Bleeker, a fish with but 33 or 34 series of scales. In his great work on the "Fishes of India" issued eleven years later, he, for some reason which he neglected to explain, altered his opinion and described and figured *M. cunnesius* as having from 33 to 35 series of scales only, and adds to its synonymy *M. longimanus* and his *M. engeli*. That, however, he was in considerable doubt as to the propriety of his action seems probable from the confusion which is apparent in that part of the synonymy following *Mugil cunnesius*. We have not at hand a copy of the "Fauna of British India," but we have no doubt that the error is perpetuated there, since Waite in his recent "Synopsis" includes *M. cunnesius* among the fishes of New South Wales, while omitting *M. longimanus*; in this he has evidently followed Day, not having an example on which to form an unbiased judgment. As far back as 1879 Steindachner recorded a specimen of *M. longimanus* from Port Jackson, where, however, all the efforts of half a dozen enthusiastic marine biologists have failed to secure a second specimen. In the following year Klunzinger reported its occurrence in Cleveland Bay, Middle Queensland. Both these latter records properly belong to the form, which we have here separated as *Mugil nortoni*, the true Indo-Malayan *M. longimanus* never having, in our opinion, been

properly certified from Australian waters, though it possibly occurs on our north-western coast.

Appended is the synonymy and principal differential characters of the three species:—

1. MUGIL CUNNESIUS.

Kunnessee Russell, Fish. Vizag., ii, p. 65, pl. clxxxi, 1803 : Coromandel Coast—Cuvier, Regne Anim., 2nd. ed., ii, p. 232, 1829—Griffith, in Cuvier's Anim. Kingd., x, p. 224, 1834.

Mugil cunnesius Cuvier & Valenciennes, Hist. Nat. Poiss., xi, p. 114, 1836 : Bombay ; Moluccas—Cantor, Journ. Asiat. Soc. Bengal, 1849, p. 1082 : Pinang ; Malay Peninsula ; Singapore—Günther, B. M. Catal. Fish., iii, p. 434, 1861 : Amboina—Day, Proc. Zool. Soc., 1865, p. 33 : Cochin—id., Fish. Malabar, p. 136, 1865.

? *Mugil cunnesius* Rüppell, Neue Wirbelth. Abyss., Fisch. p. 131, 1838 : Red Sea.

Scales in 42 or 43 transverse series ; depth of body subequal to length of head ; upper lip thin ; tip of maxillary exposed ; upper profile of snout feebly convex ; outer border of preorbital smooth, nearly straight ; spinous dorsal originating nearer to tip of snout than to base of caudal ; origins of dorsal fins corresponding to the 12th. and 25th. body-scales ; vertical fins scaleless ; caudal fin emarginate ; pectoral fin much shorter than the head.

2. MUGIL LONGIMANUS.

Mugil cunnesius Bleeker, Nat. Tijdschr. Ned. Ind., iii, 1852, p. 434 : Banka ; Java ; Madura ; Sumatra—id., Act. Soc. Sci. Ind. Neerl., viii, 1860, p. 8—Day, Fish. India, p. 349, pl. lxxiv, fig. 3, 1876 : Orissa ; Bombay. Not of Cuvier & Valenciennes, 1836.

Mugil longimanus Günther, B. M. Catal. Fish., iii, p. 428, 1861 : East Indies.

Mugil engeli Day, Proc. Zool. Soc., 1865, p. 33 : Cochin—id., Fish. Malabar, p. 139, 1865. Not of Bleeker, 1858.

Scales in 33 to 35 transverse series ; depth of body much greater than length of head ; upper lip rather thick ; tip of maxillary concealed ; upper profile of snout very convex ; outer border of preorbital curved and serrated ; spinous dorsal originating rather nearer to tip of snout than to base of caudal ; origins of dorsal fins corresponding to the 10th. and 20th. body-scales ; vertical fins scaly ; caudal fin truncated ; pectoral as long as the head.

3. MUGIL NORTONI.

Syn. ut supra.

Differs from *M. longimanus* in the following characters:—Scales in 32 to 34 transverse series ; upper profile of snout feebly convex ; outer border of preorbital deeply notched ; spinous dorsal originating nearer to base of caudal than to tip of snout ; origins of dorsal fins corresponding to the 13th. and 24th. body-scales ; caudal fin emarginate.

MUGIL TADOPSIS sp. nov.

BROWN-BANDED MULLET.

D. viii, i 8; A. iii 9. Sc. 32 or 33-11. Ventral contour of body more arched than that of the dorsal; greatest depth below the spinous dorsal $3\frac{1}{2}$ to $3\frac{3}{5}$, the length of the head $4\frac{2}{5}$ in the length of the body. Upper profile of head feebly convex to before the upper third of the eyes, sublinear and but little oblique behind. Upper lip thin, its exposed edge rounded above, vertical in front, its depth $\frac{2}{5}$ of the longitudinal diameter of the pupil; lower border formed by a pair of sublinear lobes, separated by a narrow symphyseal notch. Jaws with a single series of minute cilia. Maxillary extending to behind the posterior nostril, bent abruptly downwards and somewhat thickened posteriorly, its distal limb exposed. Snout broad, feebly rounded in front, almost wholly scaly, about as long as the diameter of the eye, which is $3\frac{7}{8}$ to $4\frac{1}{4}$ in the length of the head; adipose lid narrow in front, much wider and nearly reaching the pupil behind. Interorbital region convex, its width 2 to $2\frac{1}{5}$ in the length of the head. Preorbital scaly, its outer border deeply concave, feebly serrated posteriorly, and forming a rectangle or rather less than a rectangle with the distal border, which is subtruncate and finely denticulated. Depth of cheek below the middle of the eye about half a diameter of the eye. Rami of lower jaw meeting at an obtuse angle, separated by a shallow mesial groove and almost wholly scaly. Free intermandibular space narrow and cuneiform. Interopercles in contact. Spinous dorsal originating above the 10th. body scale and somewhat nearer to the tip of the snout than to the base of the caudal; spines strong, the 2nd. the highest, $1\frac{1}{3}$ to $1\frac{3}{5}$ in the length of the head: soft dorsal originating above the 20th. body scale and considerably higher than the spinous dorsal, the distance between their origins $\frac{1}{5}$ more than the length of the head; outer border rather deeply emarginate, the last ray a little longer than the penultimate. Anal originating below the 19th. body-scale, as high as the soft dorsal, the space between its origin and that of the soft dorsal $\frac{1}{5}$ longer than the head, its basal length $1\frac{2}{5}$ to $1\frac{1}{2}$ in its distance from the caudal; outer border emarginate, the posterior border but little produced. Caudal fin deeply emarginate, with 12 branched rays, the middle pair $\frac{4}{5}$ of the upper, and 6 to $6\frac{1}{4}$ in the length of the body: caudal peduncle strong and deep, its length 6 to $6\frac{3}{4}$, its least depth 7 to $7\frac{1}{4}$ in the body-length. Pectoral fin inserted nearer to the dorsal than to the ventral profile, with 17 rays, the 4th. the longest, extending to the 7th. body scale, and $4\frac{3}{5}$ to 5 in the length of the body; space between its tip and the origin of the spinous dorsal $\frac{5}{6}$ to $\frac{3}{4}$ of its length: axillary scale

vestigial. Ventral inserted midway between the anal and the tip of the mandible or a little nearer the latter, and below the last 3rd. of the pectoral, its length $1\frac{2}{3}$ to $1\frac{1}{2}$ in the head. Scales of cheeks and lower surfaces finely ciliated; 6 series of scales between the eye and the angle of the interopercle, 1 of which is on that bone; opercular scales in 3 series, the outer larger than the body scales; 20 scales in front of the spinous dorsal; 8 or 9 scales from the origin of the soft dorsal to behind the anal. Gill-rakers short, about 50 on the lower branch of the anterior arch, the longest $\frac{2}{7}$ of the diameter of the eye. Dark blue above, silvery washed with bronze on the sides, pearly white below; each scale of the back and sides with a golden brown median bar, forming together longitudinal bands; opercle with a cloudy spot; dorsal and caudal fins dull greenish; an obscure blackish blotch in the axil of the pectoral; iris lead-blue, with a narrow golden rim superiorly. [*tade*, an allied species; ♂*ψ*s, form].

Type in the Queensland Museum.

Total length 325 millimeters.

Described from three Moreton Bay specimens purchased in the Brisbane Market.

The synonymy of the East Australian fresh water mullet having become overburdened by the addition of new names it may be advisable to correct it here, and so prevent further confusion.

TRACHYSTOMA PETARDI.

- Mugil breviceps* Steindachner, Sitzb. Ak. Wien, liii, 1866, p. 459, pl. i, fig. 1:
Port Jackson—id., Ann. & Mag. Nat. Hist., (3) xvii, 1866, p. 318—Ogilby,
Catal. Fish. N. S. Wales, p. 41, 1886. Not of Cuvier & Valenciennes, 1836.
- Mugil petardi* Castelnau, Res. Fish. Austr., p. 32, 1875: Richmond River—
Waite, Synops. Fish. N. S. Wales, p. 22, 1904.
- Mugil pettardi* Macleay, Proc. Linn. Soc. N. S. Wales, iv, 1879, p. 422—
Ogilby, l.c., p. 42. Emended orthography.
- Trachystoma multidens* Ogilby, Proc. Zool. Soc., 1887, p. 614: Keruah River—
Waite, l.c.
- Liza breviceps* Tosh, Mar. Biol. Rep. Queensl., pp. 2 & 3, pl. ii, fig. 4, 1963:
Nerang River.
- Mugil parviceps* Waite, l.c. Substitute for *Mugil breviceps* preoccupied.

SQUALOMUGIL gen. nov.

Scales large and cycloid; head depressed, scaly, except the tip of the snout and the lower jaw. Mouth moderate, obtusangular, inferior, not protractile. Upper lip thin; maxillary concealed. Jaws with spatulate cilia. Nostrils widely separated, the anterior patent and subinferior, the posterior valvular and superior. Distal border of preorbital concealed. Soft dorsal and anal fins scaly, the

former with i 7 rays; anal with iii 8 rays, originating far in advance of the second dorsal; caudal fin feebly emarginate, the peduncle stout; pectoral fin long and falciform, with 15 rays; axillary scale short, the pore inconspicuous; outer ventral ray not longer than the second, the inner free. Gill-rakers numerous, slender, rather short. [*Squalus*, a shark; *mugil*, a mullet: in allusion to its flattened head and inferior mouth].

Coast of Queensland.

Type *Mugil nasutus* de Vis.

SPHYRÆNIDÆ.

SPHYRÆNA WAITII sp. nov.

WAITE'S SEA-PIKE.

D. v, i 9; A. ii 9; Sc. 11—128—14; L. l. 128; Vert. 12 + 12 = 24. Body robust and somewhat compressed, its width $\frac{1}{3}$ of its depth, which is $\frac{1}{7}$ of its length. Depth of head rather less than the postorbital region, its length a little more than $\frac{1}{3}$ of that of the body. Diameter of eye $2\frac{1}{2}$ in the length of the snout and $5\frac{1}{2}$ in that of the head. Interorbital region feebly convex, mesially traversed by a pair of low, widely divergent ridges, which extend in slightly convergent lines on the snout as far as the level of the premaxillary processes, where they again become divergent; interorbital width $6\frac{1}{4}$ in the length of the head. Maxillary not reaching to the vertical from the eye, from which it is distant $\frac{2}{5}$ of a diameter, its length $\frac{3}{7}$ of that of the head, its greatest width, which is at the upper predistal angle, rather less than half the eye. Lower jaw without fleshy appendage. Premaxillaries with about 60 small subequal teeth on each ramus, divided into irregular groups by the occasional absence of a tooth; anteriorly with two pairs of large cultriform canines, the anterior pair erect, the posterior pair much the larger and strongly declined backwards: palatine bones with 3 strong compressed trenchant teeth anteriorly, succeeded by a row of small teeth: mandible with a series of 14 widely separated teeth, about 7 of which, on and behind the middle of the jaw, are somewhat enlarged; a single median compressed canine, directed backwards, anteriorly. Opercle without spinous point. A single elongate gill-raker on the lower branch of the anterior arch just in front of the angle, its length $\frac{3}{8}$ of the diameter of the eye. Checks and opercles scaly; upper surface of head naked. Spinous dorsal originating above the tip of the appressed pectoral, its distance from the tip of the snout $2\frac{1}{8}$ in the length of the body; dorsal spines weak and flexible, the 1st. and

2nd. equal and highest, $\frac{7}{9}$ of the length of the snout; soft dorsal much lower than the spinous, from which it is separated by an interspace, which is rather more than twice the length of its base: anal originating a little behind and somewhat shorter than the dorsal: lower caudal lobe slightly the longer, $5\frac{1}{3}$ in the length of the body; least depth of caudal peduncle rather more than the eye: pectoral with 13 rays, $\frac{3}{4}$ of the length of the snout and $\frac{1}{5}$ of that of the body: ventral inserted well behind the pectoral, below the middle of the spinous dorsal, and midway between the tip of the mandible and the rudimentary rays of the caudal; hinder border truncate; spine slender and nearly as long as the outer ray, which is $\frac{5}{8}$ of the snout. Green above, silvery below: soft dorsal and caudal yellow, the latter with a broad posterior blackish marginal band. [Named for Edgar R. Waite, author of many valuable papers on Australian biology].

Type in the Queensland Museum.

Total length of type 250 millimeters.

Coast of New South Wales. [Port Jackson District].

Some years ago Waite (Rec. Austr. Mus., iii, 1900, p. 210) called attention to certain discrepancies between the description of *Sphyræna novæ-hollandiæ* in my work on the "Edible Fishes of New South Wales" and that of its original describer, and remarked that "it is possible that we may have a third species in New South Wales." This supposition is fully borne out by the specimen now before me, in which the positions of the spinous dorsal and ventral fins are very different; the form is much more robust, the eye larger, the pectoral much longer, etc.

BERYCIDÆ.

OSTICHTHYS AUSTRALIS (Castelnau).

CASTELNAU'S SQUIRREL-FISH.

Myripristes australis Castelnau, Res. Fish. Austr., p. 4, 1875: Cape York.

D. xi 15 or 16; A. iv 13; P. 15 or 16. Sc. 3—28— $6\frac{1}{2}$. Depth of body $2\frac{1}{8}$, length of head 3 in the length of the body. Snout $2\frac{3}{8}$ in the diameter of the eye, which is $\frac{1}{2}$ of the length of the head. Interorbital region flat, its width $1\frac{7}{8}$ in the diameter of the eye. Maxillary extending to below the hinder border of the pupil, its length $1\frac{2}{3}$ in that of the head, the width of its distal extremity $2\frac{1}{3}$ in the diameter of the eye. Hinder limb of preopercle linear and vertical with a moderate inclination forward and feebly serrated, the broadly rounded angle and lower limb evenly and much more strongly serrated; opercular spine short, with several denticulations

above it. Upper surface of head with a pair of median longitudinal ridges, which commence on the sides of the postorbital processes, run parallel to one another but well separated to the middle of the interorbital region, where they gradually diverge to form gentle curves, which enclose a narrow spatulate area; the posterior convergent portions do not, however, meet, and are separated from the short nuchal ridge by a considerable hiatus: a well developed supranasal ridge forming a V-shaped band, with the premaxillary ridge: supraciliary ridges smooth in front, feebly denticulate behind: a supplementary ridge leaves the supraciliary ridge opposite to the middle of the eye and on the temporal region breaks up into several divergent ridges, one or more of which may be branched; all these ridges are smooth but end in a blunt point: articular bones with coarse, smooth, flabelliform striae. Dorsal fin originating above the opercular membrane; 4th. spine longest, longer than the eye, $1\frac{6}{7}$ in the length of the head and $1\frac{2}{3}$ in that of the 2nd. ray; last dorsal spine $\frac{2}{3}$ of the longest. Anal originating below the last dorsal spine, the 4th. spine longer but much weaker than the 3rd., 2 in the length of the head and $1\frac{3}{5}$ in the 2nd. ray, which is a little longer than that of the dorsal. Middle caudal rays $2\frac{1}{7}$ in the upper lobe, which is $3\frac{1}{3}$ in the length of the body; least depth of peduncle $1\frac{3}{5}$ in the diameter of the eye. Pectoral fin extending to the vertical from the vent, $1\frac{1}{5}$ in the length of the head. Ventral shorter than the pectoral, reaching the vent. Gill-rakers $13+27$, the longest $\frac{1}{2}$ the diameter of the eye. Pale yellow, each scale of the back with a broad reddish brown band, which covers the whole scale except a narrow basal bar; on the sides the dark band gradually decreases in width until below the lateral line it is represented only by a narrow median vertical bar, which finally disappears: head above brownish yellow, the ridges darker: fins hyaline, the pectoral with a dark axillary spot, which is continued downwards to cover all the upper half of the base posteriorly. [*australis*, southern].

Type in the Queensland Museum.

Described from two spirit specimens, measuring respectively 100 and 105 millimeters, and labeled "Coast of Queensland."

OSTICHTHYS SPINICEPS sp. nov.

SPINY-HEADED SQUIRREL-FISH.

D. xi 14; A. iv 12; P. 15. Sc. 3—28— $6\frac{1}{2}$. Depth of body $2\frac{1}{2}$, length of head $2\frac{3}{4}$ in the length of the body. Snout rather less than $\frac{1}{2}$ the diameter of the eye, which is $2\frac{2}{5}$ in the length of the head.

Interorbital region feebly convex, its width $2\frac{1}{6}$ in the diameter of the eye. Maxillary extending to well behind the pupil, its length $1\frac{2}{3}$ in that of the head, the width of its distal extremity $1\frac{1}{2}$ in the diameter of the eye. Preopercle as in *O. australis*, but with 5 much enlarged denticles at the angle; opercular spine longer and stronger than in that species. Median ridges of head in contact on the snout; supraciliary ridges denticulated in front and behind; all the cephalic ridges terminating in a strong spine; lower branch of temporal ridge with two postmedian spines; otherwise as in *O. australis*. Dorsal fin inserted above the opercular membrane; 3rd. and 4th. spines equal and longest, as long as the eye, $2\frac{2}{5}$ in the length of the head and $1\frac{2}{3}$ in that of the 3rd. and longest ray; last dorsal spine $\frac{2}{3}$ of the longest. Anal fin originating below the 10th. dorsal spine, the 3rd. spine longer and much stronger than the 4th., its length $2\frac{1}{5}$ in the head and $1\frac{1}{2}$ in the 2nd. ray; both spines and rays longer than those of the dorsal. Middle caudal rays $2\frac{1}{3}$ in the upper lobe, which is $\frac{1}{3}$ of the length of the body; least depth of caudal peduncle $1\frac{2}{5}$ in the diameter of the eye. Pectoral fin not extending to the vertical from the vent, $1\frac{1}{3}$ in the length of the head. Ventral as long as the pectoral, reaching the vent. Gill-rakers 14+28, the longest about $\frac{1}{2}$ the diameter of the eye. Yellowish brown above, each of the scales with a broad violet band posteriorly; sides and lower surfaces yellow, the edges of the scales darker. [*spina*, spine; *ceps*, head: the cephalic ridges being spinose].

Type in the Queensland Museum.

Described from a specimen, 133 millimeters long, collected in the South Sea Islands by Capt. Charles F. Browne, and presented by him to the Museum.

HOLOCENTRUS ANGUSTIFRONS sp. nov.

NARROW-FRONTED SQUIRREL-FISH.

D. xi 11; A. iv 7; P. 12. Sc. 4—41—8. Depth of body $3\frac{3}{8}$, length of head $2\frac{8}{9}$ in the length of the body. Snout deeply emarginate in front, $1\frac{3}{4}$ in the diameter of the eye, which is $2\frac{1}{2}$ in the length of the head. Interorbital region slightly concave, its width equaling the snout. Maxillary extending to a little beyond the middle of the eye, its length $2\frac{1}{3}$ in that of the head, the width of its distal extremity $\frac{1}{3}$ of the diameter of the eye; premaxillary processes extending to between the anterior borders of the pupils, their length $\frac{1}{2}$ of the diameter of the eye; lower jaw the longer; preorbital strongly serrated, the anterior spine very stout and

triangular; hinder limb of preopercle linear and nearly vertical, finely serrated as also is the oblique lower limb; preopercular spine short, reaching but little beyond the border of the subopercle, with a strong double median ridge, $2\frac{1}{5}$ in the diameter of the eye; a pair of strong opercular spines, with one or two denticles above them. Upper surface of head with a pair of median ridges, enclosing a concave porous area; supraciliary ridges smooth in front, and with two strong and several small spines behind; parietal region with about nine flabelliform ridges, temporal with one somewhat coarser ridge, all smooth but terminating in acute spines; articular bones with coarse somewhat anastomosing smooth striæ. Dorsal fin originating behind the opercle, the 1st. spine $\frac{3}{4}$ of the 3rd., which is the longest, $\frac{1}{2}$ of the length of the head and $\frac{9}{10}$ of the 2nd. and 3rd. rays, which are equal and longest; last spine but little longer than the 10th., $3\frac{3}{4}$ in the longest spine. Anal originating below the 4th. dorsal ray; 4th. spine stronger and nearly as long as the 3rd. dorsal spine, $1\frac{2}{3}$ in the 3rd. spine, which is $3\frac{6}{7}$ in the length of the body; 2nd. ray longest, scarcely so long as the longest dorsal ray. Middle caudal rays $2\frac{1}{2}$ in the upper lobe, which is $4\frac{1}{7}$ in the body: least depth of peduncle $1\frac{3}{4}$ in the diameter of the eye. Pectoral fin extending to below the 7th. dorsal spine, $1\frac{2}{3}$ in the length of the head. Ventral a little shorter than the pectoral, but reaching considerably further back, to midway between its origin and the base of the 3rd. anal ray. Gill-rakers 1+6, with some tubercles on both branches, the longest $4\frac{1}{4}$ in the diameter of the eye. Colors after long immersion in alcohol and exposure to the light—yellowish silvery, with traces of about eight darker longitudinal bands; each of the scales of the back above the lateral line with a chestnut basal spot, which diminishes in size posteriorly until beyond the spinous dorsal it is broken up into numerous fine dots: upper surface of head brown; scales of cheek similar to those of the back: fins immaculate. [*angustus*, narrow; *frons*, forehead, i.e. interorbital region].

Described from a specimen measuring 153 millimeters, presented to the State Museum by Capt. C. F. Browne, who obtained it at New Britain.

The species belongs to the *sammara-læve* group, but may easily be distinguished from either of those species by the narrow interorbital region, which in both of them measures $\frac{3}{4}$ of the eye as against only $\frac{1}{7}$ in this species. The number of longitudinal series of scales is also greater, of pectoral rays fewer, the premaxillary groove is shorter, the preopercular spine is strongly ridged and extends beyond the subopercular border, etc.

PSEUDOCROMIDIDÆ.

PSEUDOCROMIS WILDII sp. nov.

D. iii 27; A. iii 14. Sc. 2—37—14; L. l. 25 + 8. Dorsal profile strongly arched, the ventral nearly straight; depth of body $2\frac{2}{3}$, length of head $3\frac{1}{10}$ in the length of the body. Snout rounded, $1\frac{1}{7}$ in the diameter of the eye, which is $3\frac{1}{2}$ in the length of the head. Interorbital region convex, its width $5\frac{1}{5}$ in the head. Maxillary extending to a little beyond the anterior border of the eye. 3rd. dorsal spine the longest, $\frac{2}{3}$ of the diameter of the eye and $\frac{2}{7}$ of the longest rays, which are in the last quarter of the fin. Anal originating below the 9th. dorsal ray. Caudal fin rounded, $\frac{1}{4}$ of the length of the body: least depth of caudal peduncle $2\frac{2}{5}$ in the depth of the body. Pectoral fin with 16 rays, extending to the 14th. body-scale, its length $3\frac{2}{3}$ in that of the body. 2nd. ventral ray the longest, as long as the pectoral and extending to the vent. Upper lateral line ceasing below the 18th. dorsal ray. Dark golden brown, each of the body scales with a blackish median spot, forming lines; opercular region lighter: fins uniform dark brown. [Named for Mr. Charles James Wild, Acting Curator of the Queensland Museum, to whom I am indebted for the opportunity of describing the fishes contained in this paper].

Type in the Queensland Museum.

Total length 64 millimeters.

Moreton Bay, Queensland.

DAMPIERIA LONGIPINNIS sp. nov.

D. ii 35; A. iii 19. Sc. 1—55—16; L. l. 44 + 7. Ventral profile much more arched than the dorsal, which is nearly straight behind the nape; depth of body $3\frac{1}{4}$, length of head $3\frac{3}{5}$ in the length of the body. Upper profile of head obliquely linear, the nape convex; snout rounded, $\frac{5}{6}$ of the diameter of the eye, which is $3\frac{1}{6}$ in the length of the head. Interorbital region convex, its width $5\frac{1}{4}$ in the head. Maxillary extending to the vertical from the anterior border of the eye. Second dorsal spine the longer, rather more than the diameter of the eye and $\frac{1}{2}$ of the longest ray, which is in the last quarter of the fin. Anal fin originating below the 17th. dorsal ray. Caudal fin pointed, $2\frac{1}{2}$ in the length of the body, the least depth of the peduncle $\frac{1}{2}$ of the depth of the body. Pectoral fin with 18 rays, extending to below the 25th. scale of the lateral line, its length $3\frac{5}{8}$ in that of the body. Second and third ventral rays equal and longest,

$4\frac{1}{2}$ in the length of the body and reaching to the vent. Upper lateral line terminating below the 26th. dorsal ray. Uniform pale reddish brown, the fins somewhat darker. [*longus*, long; *pinna*, a fin].

Type in the Queensland Museum.

Total length 96 millimeters.

Coast of Queensland.

Described from an example obtained many years ago at Bowen; two smaller specimens were taken at the same time, but are unfortunately in bad condition.

The generic name *Cichlops* Müller & Troschel, 1849, being antedated in birds by *Cichlops* (= *Anthus*) Hodgson, 1844, and therefore inadmissible, Gill (Proc. U. S. Nat. Mus., xxviii, 1905, p. 119) proposed to resurrect *Labracinus* Schlegel. But this genus was never described nor even referred to any type, and in fact was not published until some years after its MS. attachment to specimens in the Leyden Museum. It is therefore but just that Castelnau's name *Dampieria* (Res. Fish. Austr., p. 30, 1875) having been fully diagnosed should receive recognition.

CALLIONYMIDÆ.

CALLIONYMUS LIMICEPS sp. nov.

ROUGH-HEADED SCULPIN.

B. vi. D. iv 9. A. 9. C. 10. P. 18-19. V. i 5. Body much depressed, its depth $10\frac{1}{2}$ to $12\frac{1}{2}$, its width 6 to $6\frac{1}{2}$ in the total length. Lateral line originating a little above and behind the gill-opening; thence bent downwards and outwards to a level with the base of the pectoral, from which it takes an irregularly undulating course to and slightly beyond the middle of the base of the caudal; nuchal line inconspicuous in the adult; occipito-parietal line passing forward above the gill-opening from the origin of the lateral line to the postero-inferior angle of the eye, where it curves downwards to form a wavy line across the suborbital region, but does not reach the angle of the mouth; opercular system consisting of a bifurcate line, which diverges from the occipital line} midway between the gill-opening and the eye, the anterior branch passing directly downwards to the base of the preopercular spine, the posterior backwards and downwards across the front half of the opercle, over which it distributes radiating canals. Head strongly depressed, its depth $2\frac{1}{2}$ to 3 in its width, its length 3 to $3\frac{1}{2}$ in the total length. Snout short or moderate, with feebly convex profile, its width at the corners of the mouth greater than its length in the adult male, equal to or less in the female and young. Upper jaw the longer;

maxillary not reaching to the vertical from the eye. Teeth in the upper jaw in a broad band which is of equal width throughout, very fine sharp and densely crowded, the two outer series on each side posteriorly greatly enlarged and recurved; those of the lower jaw all small, the band decreasing in width to a single series posteriorly and extending much further back than the premaxillary band. Space between the inner anterior angles of the preorbitals as wide as the eye, its edge truncated or emarginate. Diameter of eye 1 to $1\frac{3}{5}$ in the length of the snout, $2\frac{3}{4}$ to $3\frac{1}{5}$ in the width of the head, and $3\frac{1}{5}$ to 5 in the length of the same. Interorbital region narrow, one fourth or less than one fourth of the diameter of the eye, forming a deep groove between the strongly developed supraciliary ridges. Preopercular spine strong, a little shorter than the eye, extending backwards to or slightly beyond the level of the gill-opening, its distal extremity strongly curved upwards, the upper border with a single rather slender antrorsely curved barb; lower border with a much stronger barb directed outwards and forwards and inserted mesially. Occipital armature consisting of a pair of bucklers from which in the adult radiate in every direction series of short dentiform processes, which not only form a file-like protection to the occiput, but extend forward along the entire supraciliary ridge, and often form a small patch anteriorly on the mesial line of the nape; in younger specimens the armature is usually reduced to a few coarse striae directed inwards and backwards, between which and on the anterior facies of the bucklers are fine raised reticulated lines.* Spinous dorsal inserted midway between origin of soft dorsal and posterior border or (in large males) middle of eye; in the male all the spines end in slender filaments, the length of which is subject to great individual variation;† the two first are, however, always elongate, the last comparatively short; in the series before me the extension of the first spine varies from the base of the eighth dorsal ray to that of the caudal fin, its length being from two-thirds to one-half of the length of the body; the second spine extends to between the base of the fourth ray and the middle of the caudal peduncle;‡ the third to between the origin and the end of the soft dorsal;§ in the female the spines are graduated from the first, the

* The strength of the armature does not seemingly always correspond with other characters of the adult, for in the type specimen, a small male with the dorsal spines more developed than in any other example, which I have as yet seen, the occiput is nearly smooth.

† This variation is in no wise dependent upon the size of the fish.

‡ These outside measurements belong to the two smallest examples in the collection the large ones being intermediate.

§ The longer of these two measurements is taken from a small, the shorter from a large example.

height of which is equal to or a little more than the space between its origin and the orbit: free space between the dorsals about as long as the gill-opening: origin of soft dorsal about as far from the tip of the snout as from the middle of the caudal peduncle; its outer border is feebly emarginate, the fourth, fifth, and sixth rays the shortest, the first subequal to the eighth; the last the longest, much less produced in the females and young males than in adult males, in which it extends well beyond the base of the caudal. Anal originating below the second dorsal ray, lower than the soft dorsal, its rays graduated from first to last, which is not produced, and reaches to or nearly to the caudal. Caudal fin with two upper and three lower rays simple; middle rays the longest, $2\frac{3}{4}$ to 3 (in the male), $3\frac{2}{5}$ to $3\frac{1}{2}$ (in the female) in the length of the body. Pectoral fins inserted below the anterior half of the spinous dorsal; the outer border concave above, feebly convex below; middle rays the longest, much less than the width of the head. First ventral ray $2\frac{2}{5}$ in the length of the fourth or fifth, which are subequal, 4 to $4\frac{1}{3}$ in the length of the body and extend to or not quite to the origin of the anal. Gill-openings transversely oval, protected anteriorly by a fold of the opercular membrane, equidistant from the eye and the origin of the spinous dorsal, but nearer to the latter than to the pectoral, which distance is as long as the space between the gill-openings. Pharyngeal teeth molariform.

Coloration:—(After long immersion in alcohol). Pale brown above, with numerous inconspicuous lighter spots; sides yellowish, uniform or with brown vertical bars; lower surface dull whitish. Spinous dorsal grayish or pale brown, usually with a dark brown spot on the membranes of the second or third rays, and sometimes with an angular band above the spot; filaments with brown and white annuli throughout their whole length; in the female the fin is dark brown, usually the first ray and sometimes the base white or pale brown; second dorsal hyaline, each ray with two or three brown spots; basal two thirds of the fin with a few clouded purplish blotches, and in the male the outer third with a few narrow wavy oblique lines between the rays; outer edge of anal smoky, the rays and the base whitish: caudal with a few brown or purplish spots and blotches: upper pectoral rays with brown and white annuli: ventral fins hyaline; the rays pale brown, with a few small reddish brown spots or short lines. (*lima*, a file; *ceps*, head).

Total length 120 millimeters.

Types in the Queensland Museum.

Moreton Bay, Queensland.

Numerous specimens of this fine callionymid were collected by Messrs. Wild and Broadbent in September 1892; they are in bad condition. The species has not been noticed since.

The handsome species here described is closely allied to the Japanese *Callionymus lunatus* Schlegel,* which differs from it in the following characters:—the head is apparently much less depressed, the lower preopercular barb is small and basal, the occiput is smooth, the gill-openings are round and nearer to the origin of the spinous dorsal than to the eye, only the first dorsal spine is filiform, the last ray of the soft dorsal and anal fins is not produced, or only slightly so in the adult male; the spinous dorsal has a black ocellus posteriorly in the male, while the membrane of the first spine is light colored in the female.

In this connection it may be interesting to mention that within the last two years I have handled three fine male examples of the little known *Dactylopus dactylopus* (Cuvier & Valenciennes)†, all from Moreton Bay. Two of these are in the State Museum, the third in that of the Amateur Fishermen's Association, to whom it was presented by Mr. Matthew Colclough of Wynnum. Hitherto the species has been known only from the Celebes and Amboina.

* Faun. Japon., Pisc. p. 155, pl. lxxxviii, fig. 4, 1845; Jordan & Fowler, Proc. U. S. Nat. Mus., xxv, 1903, p. 949, fig. 5.

† Hist. Nat. Poiss., xii, p. 310.

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